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ABSTRACT

The United States Training and Employment Service General Aptitude Test Battery (GATB), first published in 1947, has been included in a continuing program of research to validate the tests against success in many different occupations. The GATB consists of 12 tests which measure nine aptitudes: General Learning Ability; Verbal Aptitude; Numerical Aptitude; Spatial Aptitude; Form Perception; Clerical Perception; Motor Coordination; Finger Dexterity; and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, and a standard deviation of 20. Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, when combined, predict job performance. Cutting scores are set only for those aptitudes which aid in predicting the performance of the job duties of the experimental sample. The GATB norms described are appropriate only for jobs with content similar to that shown in the job description presented in this report. A description of the validation sample and a personnel evaluation form are also included. (AG)

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U.S. Training and
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Technical Report
S-348 R

Development of USTES

APTITUDE TEST
BATTERY FOR

CORRECTION OFFICER

(gov. ser.)
372.868

U.S. DEPARTMENT OF LABOR
Manpower Administration

TM 002 247

ED 072051

Technical Report on Development of USTES Aptitude Test Battery

For . . . .

Correction Officer (gov. ser.) 372.868

S-348R

(Developed in Cooperation with the
Michigan State Employment Service)

U. S. Department of Labor
Manpower Administration

June 1970

FOREWORD

The United States Training and Employment Service General Aptitude Test Battery (GATB) was first published in 1947. Since that time the GATB has been included in a continuing program of research to validate the tests against success in many different occupations. Because of its extensive research base the GATB has come to be recognized as the best validated multiple aptitude test battery in existence for use in vocational guidance.

The GATB consists of 12 tests which measure 9 aptitudes: General Learning Ability, Verbal Aptitude, Numerical Aptitude, Spatial Aptitude, Form Perception, Clerical Perception, Motor Coordination, Finger Dexterity, and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, with a standard deviation of 20.

Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, in combination predict job performance. For any given occupation, cutting scores are set only for those aptitudes which contribute to the prediction of performance of the job duties of the experimental sample. It is important to recognize that another job might have the same job title but the job content might not be similar. The GATB norms described in this report are appropriate for use only for jobs with content similar to that shown in the job description included in this report.

GATB Study #2565

Development of USTES Aptitude Test Battery

For

Correction Officer (gov. ser.) 372.868-018

S-348R

This report describes research undertaken for the purpose of developing General Aptitude Test Battery (GATB) norms for the occupation of Correction Officer (gov. ser.) 372.868-018. The following norms were established:

GATB Aptitudes	Minimum Acceptable GATB Scores
V - Verbal Aptitude	95
N - Numerical Aptitude	95
P - Form Perception	85
Q - Clerical Perception	100

Research Summary

Sample:

51 male workers employed as Correction Officers in Michigan.

This study was conducted prior to the requirement of providing minority group information. Therefore, minority group status is unknown.

Criterion:

Supervisory ratings.

Design:

Concurrent (test and criterion data were collected at approximately the same time).

Minimum aptitude requirements were determined on the basis of a job analysis and statistical analyses of aptitude mean scores, aptitude-criterion correlations and selective efficiences.

Concurrent Validity:

Phi Coefficient = .39 ($P/2 < .005$)

Effectiveness of Norms:

Only 69% of the nontest-selected workers used for this study were good workers; if the workers had been test-selected with the above norms, 81% would have been good workers. Thirty-one percent of the nontest-selected workers used for this study were poor workers; if the workers had been test-selected with the above norms, only 19% would have been poor workers. The effectiveness of the norms is shown graphically in Table 1:

TABLE 1

Effectiveness of Norms

	Without Tests	With Tests
Good Workers	69%	81%
Poor Workers	31%	19%

SAMPLE DESCRIPTION

Size:

N = 51

Occupational Status:

Employed Workers.

Work Setting:

Workers were employed by the Federal Correctional Institution, Milan, Michigan.

Employer Selection Requirements:

Education: High school graduates preferred.

Previous Experience: 3½ years of progressively responsible experience which required dealing effectively with individuals or groups. (Substitution of education above the high school level for required experience permitted.)

Tests: All members of the sample had passed a Federal Civil Service Examination which measures verbal ability and ability to follow oral directions.

Other: Personal Interview.

Principal Activities:

The job duties for each worker are comparable to those shown in the job description in the Appendix.

Minimum Experience:

All workers in the final sample had at least 12 months job experience.

TABLE 2

Means, Standard Deviations (SD), Ranges and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education and Experience.

	Mean	SD	Range	r
Age (years)	40.5	8.1	26-56	-.025
Education (years)	11.6	1.5	7-14	.176
Experience (months)	67.3	54.8	12-224	.273

EXPERIMENTAL TEST BATTERY

All 12 tests of the GATB, B-1002A were administered during 1965.

CRITERION

The criterion data consisted of supervisory ratings of job proficiency made at approximately the same time as test data were collected. Independent ratings were made by four supervisors who were familiar with the work of those in the sample.

Rating Scale:

Form SP-21, "Descriptive Rating Scale"

Reliability:

Intercorrelations among the four independent ratings ranged from .674 to .880. The final criterion consisted of the average rating obtained from the four supervisors.

Criterion Score Distribution:

Possible Range:	9-45
Actual Range:	25-44
Mean:	34.4
Standard Deviation:	4.9

Criterion Dichotomy:

The criterion distribution was dichotomized into low and high groups by placing 31% of the sample in the low group to correspond with the percentage of workers considered unsatisfactory or marginal. Workers in the high criterion group were designated as "good workers" and those in the low group as "poor workers." The criterion critical score is 32.

APTITUDES CONSIDERED FOR INCLUSION IN THE NORMS

Aptitudes were selected for tryout in the norms on the basis of a qualitative analysis of job duties involved and a statistical analysis of test and criterion data. Aptitudes G, N, P and Q which do not have high correlations with the criterion, were considered for inclusion in the norms because the qualitative analysis indicated that Aptitude G might be important for the job duties and the sample had relatively high mean scores and relatively low standard deviation on Aptitudes G, N, and Q. Aptitude P was considered for inclusion since it was considered of critical importance to job duties. Tables 3, 4, and 5 show the results of the qualitative and statistical analyses.

TABLE 3

Qualitative Analysis
(Based on the job analysis, the aptitudes indicated appear to be important to the work performance)

Aptitude	Rationale
G - General Learning Ability	Making judgments; learning various aspects of job; determining of controlling situations; making reports; instructing inmates.
V - Verbal Ability	Making oral and written reports; instructing inmates in institutional procedures, policies and safety regulations.
P - Form Perception	Inspecting and checking locking devices

TABLE 4

Means, Standard Deviations (SD), Ranges and Pearson Product-Moment Correlations with the Criterion (r) for the Aptitudes of the GATB; N=51

	Mean	SD	Range	r
G - General Learning Ability	110.5	11.8	81-138	.210
V - Verbal Aptitude	109.5	12.3	88-139	.283*
N - Numerical Aptitude	110.4	12.1	88-136	.252
S - Spatial Aptitude	104.6	17.4	65-140	-.149
P - Form Perception	105.5	13.4	78-131	.193
Q - Clerical Perception	112.9	11.9	91-143	.384**
K - Motor Coordination	102.0	17.3	62-148	.227
F - Finger Dexterity	93.8	17.7	50-135	.101
M - Manual Dexterity	105.8	20.1	72-165	.147

*Significant at the .05 level.
**Significant at the .01 level.

TABLE 5

Summary of Qualitative and Quantitative Data

Type of Evidence	Aptitudes								
	G	V	N	S	P	Q	K	F	M
Job Analysis Data									
Important	X	X			X*				
Irrelevant									
Relatively High Mean	X	X	X			X			
Relatively Low Standard Dev.	X	X	X			X			
Significant Correlation With Criterion		X				X			
Aptitudes to be Considered for Trial Norms	G	V	N		P*	Q			

DERIVATION AND VALIDITY OF NORMS

Final norms were derived on the basis of the degree to which trial norms consis ting of various combinations of aptitudes G, V, N, P and Q at trial cutting scores were able to differentiate between the 69% of the sample considered to be good workers and the 31% of the sample considered to be poor workers. Trial cutting scores at five-point intervals approximately one standard deviation below the mean are tried because this will eliminate about one-third of the sample with three-aptitude norms. For four-aptitude trial norms, cutting scores of slightly less than one standard deviation below the mean will eliminate about one-third of the sample; for two-aptitude trial norms, minimum cutting scores of slightly more than one standard deviation below the mean will eliminate about one-third of the sample. The Phi Coefficient was used as a basis for comparing trial norms. Norms of V-95, N-95, P-85 and Q-100 provided optimum differentiation for the occupation of Correction Officer (gov. ser.) 372.868-018. The validity of these norms is shown in Table 6 and is indicated by a Phi Coefficient of .39 (statistically significant at the .005 level).

TABLE 6

Concurrent Validity of Test Norms
V-95, N-95, P-85 and Q-100

	Nonqualifying Test Scores	Qualifying Test Scores	Total
Good Workers	5	30	35
Poor Workers	9	7	16
Total	14	37	51

Phi Coefficient = .39 Chi Square (X^2_y) = 7.7

Significance Level = $P/2 < .005$

DETERMINATION OF OCCUPATIONAL APTITUDE PATTERN

The data for this study met the requirements for incorporating the occupation studied into OAP-24 which is shown in the 1970 edition of Section II of the Manual for the General Aptitude Test Battery. A Phi Coefficient of .19 is obtained with the OAP-24 norms of G-80, P-85 and Q-80.

SP-21

A-P-P-E-N-D-I-X

DESCRIPTIVE RATING SCALE
(For Aptitude Test Development Studies)

Score____

RATING SCALE FOR _____
D. O. T. Title and Code

Directions: Please read Form SP-20, "Suggestions to Raters", and then fill in the items listed below. In making your ratings, only one box should be checked for each question.

Name of Worker (print) _____
(Last) (First)

Sex: Male_____ Female_____

Company Job Title: _____

How often do you see this worker in a work situation?

☐ See him at work all the time.

☐ See him at work several times a day.

☐ See him at work several times a week.

☐ Seldom see him in work situation.

How long have you worked with him?

☐ Under one month.

☐ One to two months.

☐ Three to five months.

☐ Six months or more.

A. How much work can he get done? (Worker's ability to make efficient use of his time and to work at high speed.)

☐ 1. Capable of very low work output. Can perform only at an unsatisfactory pace.

☐ 2. Capable of low work output. Can perform at a slow pace.

☐ 3. Capable of fair work output. Can perform at an acceptable but not a fast pace.

☐ 4. Capable of high work output. Can perform at a fast pace.

☐ 5. Capable of very high work output. Can perform at an unusually fast pace.

B. How good is the quality of his work? (Worker's ability to do high-grade work which meets quality standards.)

☐ 1. Performance is inferior and almost never meets minimum quality standards.

☐ 2. The grade of his work could stand improvement. Performance is usually acceptable but somewhat inferior in quality.

☐ 3. Performance is acceptable but usually not superior in quality.

☐ 4. Performance is usually superior in quality.

☐ 5. Performance is almost always of the highest quality.

C. How accurate is he in his work? (Worker's ability to avoid making mistakes.)

☐ 1. Makes very many mistakes. Work needs constant checking.

☐ 2. Makes frequent mistakes. Work needs more checking than is desirable.

☐ 3. Makes mistakes occasionally. Work needs only normal checking.

☐ 4. Makes few mistakes. Work seldom needs checking.

☐ 5. Rarely makes a mistake. Work almost never needs checking.

D. How much does he know about his job? (Worker's understanding of the principles, equipment, materials and methods that have to do directly or indirectly with his work.)

☐ 1. Has very limited knowledge. Does not know enough to do his job adequately.

☐ 2. Has little knowledge. Knows enough to "get by."

☐ 3. Has moderate amount of knowledge. Knows enough to do fair work.

☐ 4. Has broad knowledge. Knows enough to do good work.

☐ 5. Has complete knowledge. Knows his job thoroughly.

E. How much aptitude or facility does he have for this kind of work? (Worker's adeptness or knack for performing his job easily and well.)

☐ 1. Has great difficulty doing his job. Not at all suited to this kind of work.

☐ 2. Usually has some difficulty doing his job. Not too well suited to this kind of work.

☐ 3. Does his job without too much difficulty. Fairly well suited to this kind of work.

☐ 4. Usually does his job without difficulty. Well suited to this kind of work.

☐ 5. Does his job with great ease. Exceptionally well suited for this kind of work.

F. How large a variety of job duties can he perform efficiently? (Worker's ability to handle several different operations in his work.)

☐ 1. Cannot perform different operations adequately.

☐ 2. Can perform a limited number of different operations efficiently.

☐ 3. Can perform several different operations with reasonable efficiency.

☐ 4. Can perform many different operations efficiently.

☐ 5. Can perform an unusually large variety of different operations efficiently.

G. How resourceful is he when something different comes up or something out of the ordinary occurs? (Worker's ability to apply what he already knows to a new situation.)

☐ 1. Almost never is able to figure out what to do. Needs help on even minor problems.

☐ 2. Often has difficulty handling new situations. Needs help on all but simple problems.

☐ 3. Sometimes knows what to do, sometimes doesn't. Can deal with problems that are not too complex.

☐ 4. Usually able to handle new situations. Needs help on only complex problems.

☐ 5. Practically always figures out what to do himself. Rarely needs help, even on complex problems.

H. How many practical suggestions does he make for doing things in better ways? (Worker's ability to improve work methods.)

☐ 1. Sticks strictly with the routine. Contributes nothing in the way of practical suggestions.

☐ 2. Slow to see new ways to improve methods. Contributes few practical suggestions.

☐ 3. Neither quick nor slow to see new ways to improve methods. Contributes some practical suggestions.

☐ 4. Quick to see new ways to improve methods. Contributes more than his share of practical suggestions.

☐ 5. Extremely alert to see new ways to improve methods. Contributes an unusually large number of practical suggestions.

I. Considering all the factors already rated, and only these factors, how acceptable is his work? (Worker's "all-around" ability to do his job.)

☐ 1. Would be better off without him. Performance usually not acceptable.

☐ 2. Of limited value to the organization. Performance somewhat inferior.

☐ 3. A fairly proficient worker. Performance generally acceptable.

☐ 4. A valuable worker. Performance usually superior.

☐ 5. An unusually competent worker. Performance almost always top notch.

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FACT SHEET

Job Title

Correction Officer (gov. ser.) 372.868-018

Job Summary

Guards inmates in penal institution in accordance with established policies, regulations, and procedures.

Work Performed

Observes activities of inmates and maintains control in areas such as auditorium, recreation areas, and dining room. Learns identity of known troublemakers, agitators, and escape risks. Observes inmates to detect signs of unrest and undesirable attitudes, behavior, and associations of inmates. Informs control center of unusual activity or behavior. Effects necessary steps to bring situation under control when disturbances arise.

Instructs group of inmates on safety, work detail procedures, duties, and plans and in use and care of tools and equipment. Observes workers to insure that duties are performed as specified and tools are returned to storage.

Instructs inmates in methods of sanitation and housekeeping. Observes inmates and inspects living quarters to insure that personal hygiene and housekeeping are adequate. Informs inmates of and answers inmates' questions about institution's procedures and policies. Directs inmates to person or department most able to assist when special problems or needs arise.

Orders inmates to vacate areas such as work and recreation areas, and housing units when conducting systematic shakedown. Searches area and passes hands over inmates' clothing to detect contraband. Removes contraband and reprimands inmates for possession of minor contraband items and submits misconduct reports on serious infractions.

Orders inmates to sit on respective beds without moving or talking for count of inmates at irregular but specified times. Observes inmates being counted by another officer to detect moving or talking and warns inmates who violate order. Records inmate's name and identification number from bed when empty bed is found. Calls control center to report count and irregularities.

Provides close supervision when tools of hazardous nature are being used by inmates. Ascertains that tools are returned and secured. Follows prescribed procedures when issuing "hot medications" (narcotics, barbiturates, and alcohol) as directed by medical department. Prohibits control of keys, locks, or locking devices by inmates.

Tours inmate housing and activity areas while conducting frequent but irregular inspection of security features and safeguards. Checks locking devices to detect defective locks. Scans walls, windows, grids, floors, ceilings, and bars to detect inadequate security. Taps bars with wooden mallet to detect whether bars have been partially sawed.

Prepares progress and accident reports. Investigates accounts of minor and major incidents affecting welfare of institution program to determine causes of incidents; reports incidents and suggests ways to improve or correct deficiencies.

Records changes or additions to inmate location records, maintains account for keys, and receives inmate counts when working in control center.

Reviews institution escape and riot plans. Practices use of firearms at institution's facilities to increase skill.

Effectiveness of Norms

Only 69% of the non-test-selected workers used for this study were good workers; if the workers had been test-selected with the S-348^{R}norms, 81% would have been good workers. 31% of the non-test-selected workers used for this study were poor workers; if these workers had been test-selected with the S-348^{R}norms, only 19% would have been poor workers.

Applicability of S-348^{R}Norms

The aptitude test battery is applicable to jobs which include a majority of duties described above.

GPO 898.703

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